Waves PuigTec

EQP-1A

User Manual

WAVES

TABLE OF CONTENTS

Chapter 1 – Introduction

1.1 Welcome

Thank you for choosing Waves! In order to get the most out of your Waves processor, please take the time to read through this manual.

In conjunction, we also suggest that you become familiar with www.wavesupport.net. There you will find an extensive **Answer Base**, the latest **Tech Specs**, detailed **Installation** guides, new **Software Updates**, and current information on **Authorization** and **Registration**.

By signing up at www.wavesupport.net, you will receive personalized information on your registered products, reminders when updates are available, and information on your authorization status.

1.2 Product Overview

ABOUT PULTEC

Custom-engineered and built by hand, the original Pultecs have long been a top choice of leading recording and mastering engineers. Pultecs are known for their ability to bring out individual frequency ranges without significantly altering other frequencies.

In 1951, Gene Shenk and Ollie Summerland of Pulse Techniques Inc. introduced the first passive program equalizer, the EQP-1. Using equalization circuit designs licensed from Western Electric, the initial Pultecs suffered the gain insertion losses typical of passive filters. So, they added a gain makeup stage, using a push-pull design with multiple vacuum tubes. The result is the classic we've come to know as the EQP-1A.

Conceived and created for broadband equalization, the EQP-1A features four low boost/cut frequencies, three high-cut frequencies and seven HF boost points, along with a bandwidth control for shaping the high boost curve.

1.3 About the Modeling

Many different elements contribute to the unique sonic characteristics of analog gear such as the Pultec EQP-1A. Waves painstakingly modeled and incorporated these elements into the PuigTec EQP-1A in order to fully capture and replicate the sound and performance of the original equipment.

These are some of the most important elements of analog behavior:

- **Total Harmonic Distortion**
  Perhaps the most important analog behavior is Total Harmonic Distortion or THD, which is defined as the ratio of the sum of the powers of all harmonic components to the power of the fundamental frequency. THD is usually caused by amplification, and changes signal shape and content by adding odd and even harmonics of the fundamental frequencies, which can change the overall tonal balance. THD can also change peak output gain, usually by no more than +/- 0.2-0.3 dB.

- **Transformers**
  Some hardware uses transformers to stabilize or change Input/Output loads and signal levels. In earlier days, transformers did not have a flat frequency response, and often introduced low and super-high frequency roll offs. The original Pultec EQP-1A has transformers which cause high frequency roll off, so if you encounter loss above 10kHz, this is due to the modeled transformers.
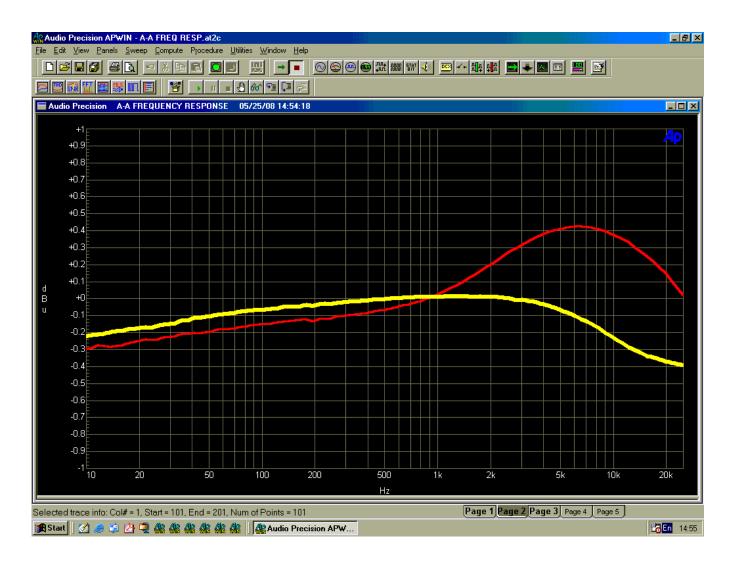
- **Hum**
  Waves modeled both 50Hz power current and 60Hz power current. If you listen closely, you will hear that there is a difference in hum level between 50Hz and 60Hz. Since hum is unique to each region and dependent upon the local electrical conditions, you may find that the modeled hum is different than the hum already present in your studio, and may not be suitable for your particular use.

- **Upon Instantiation**
  Upon instantiation of the PuigTec EQP-1A, you may hear a small change in frequency balance, which sounds like top end boost, introducing about 1dB of gain. This replicates the actual behavior of the modeled hardware, and will vary as you change the low cutoff frequency. This is also an attribute of the original hardware, caused by the interaction of its filters.

Below is a plot of the curve from the original Pultec EQP-1A, with all gains set to 0 and low cutoff set to 20hz (red) and cutoff at 100hz (yellow).

1.4 Components

WaveShell technology enables us to split Waves processors into smaller plug-ins, which we call **components**. Having a choice of components for a particular processor gives you the flexibility to choose the configuration best suited to your material.

The PuigTec EQP-1A has two component processors:

- **PuigTec EQP-1A Stereo** – A 3-band passive stereo equalizer
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- **PuigTec EQP-1A Mono** – A 3- band passive mono equalizer

Chapter 2 – Quickstart Guide

- The Low Frequency band offers a low shelf for Boost and/or Attenuation at four cutoff points. While Boost and Attenuation work on the same cutoff frequency, they do not cancel one another out when applied simultaneously; rather, they create a resonant shelf.

- Hi Band Boost offers a high bell boost with 7 cutoff points and adjustable Q (bandwidth control).

- Hi Band Attenuation offers high shelf attenuation at 3 cutoff points.

- Gain controls level trimming.

- The Output meter displays peak output level.

Chapter 3 – Interface and Controls

3.1 PuigTec EQP-1A Interface

3.2 PuigTec EQP-1A Controls

Low Band Boost
> **Range**
> 0 to 11 (18dB boost, 0.1 steps)
> **Default**
> 0

Low Band Atten
> **Range**
> 0 to 11 (18dB attenuation, 0.1 steps)
> **Default**
> 0

Low Band Frequency
> **Filter type**
> Shelf
> **Cutoff points**
> 20Hz, 30Hz, 60Hz, 100Hz
> **Default**
> 30Hz

Hi Bell Boost
> **Range**
> 0-11 (20 dB boost, 0.1 steps)
> **Default**
> 0dB

Hi Bell Bandwidth (Q)
> **Range**
> 0-11 (0=sharp, 11=wide)
> **Default**
> 0

Hi Bell Frequency
> **Range**
> 3kHz, 4kHz, 5kHz, 8kHz, 10kHz, 12kHz, 16kHz
> **Default**
> 3kHz
> **Filter types**
> Bell

High Shelf Atten
 Range
 0 to 11 (18dB attenuation, 0.1 steps)
 Default
 0

High Shelf Frequency (Atten Sel)
 Range
 5kHz, 10kHz, 20kHz
 Default
 20kHz

In turns the EQ on/off but leaves the analog modeling.
 Range
 On/Off
 Default
 On

Mains controls analog characteristics caused by noise floor and hum, based on the power supplies of the original units.
 Range
 Off, 50Hz, 60Hz
 Default
 60 Hz

Gain controls the trim level.
 Range
 -18dB to +18dB (in 0.1dB steps)
 Default
 0dB

Meter displays output level in dBFS. The LED located in the upper right corner lights up when output signal is clipping.

Chapter 4 – The WaveSystem

4.1 The WaveSystem Toolbar

All Waves processors feature the WaveSystem toolbar which takes care of most administrative functions you will encounter while working with your Waves software. The features of the WaveSystem toolbar are the same on practically all Waves processors, so familiarity with its features will be helpful whichever processor you are using.

Toolbar Functions

Undo	Undoes the last 32 performed action. The PuigTec supports multiple undo levels.
Redo	Redoes the last 32 undone action
Setup A/B	Toggles between two presets. This is useful for close comparison of different parameter settings
Copy A->B	Copies the current settings to the second preset register
Load	Recalls presets from file
Save	Saves presets in the Waves file formats
?	Opens the manual for the processor you are using

4.2 Preset Handling

Preset Types

Factory Presets are permanent presets in the Load menu. Factory presets cannot be over-written or deleted. When applicable, different component plug-ins may have different factory presets.

User Presets are your favorite settings of the plug-in saved as a preset in the Load menu, under 'User Presets'. User Presets can be over-written and deleted.

Setup Files may contain more than one preset. For example, a single file can contain all the presets for a session. When you open a Setup File, all its setups become part of your Load pop-up menu for fast access. This can be particularly useful with multiple instances of a plug-in in a single session. By saving all the settings you create into a single Setup File, they can all be quickly available for every instance of that plug-in.

Loading Presets and Setups

Load

Click-and-hold on the Load button to see the Load pop-up menu. The menu is divided into four sections. If a section is not currently available it will not appear in the Load pop-up menu.

Open Preset File…   Select to open any setup or preset file, whether from the Library or your own creations.
'Filename.xps':   Displays any currently loaded Setup File and its presets.
Factory Presets: Displays the default Factory Presets.
User Presets: Displays any loaded User Presets.

Saving Presets and Setups

Save

Click-and-hold on the Save button to see the Save pop-up menu. Four options are available. If an option is not currently available it will be grayed out and inaccessible.

Save to New File…   Select this to start a new Setup file. There are two prompts - first for the setup filename, then for the preset name. You must provide a name for both the setup file and the preset. Click OK (ENTER) to complete the save. It is a good idea to create a folder in which to save several setup files for a project.
Save 'File Name' – "Preset Name"   Overwrites the settings of the loaded preset (whether a User Preset or a preset from a Setup File) with the current settings. If a Setup File is currently loaded, the name of the Setup File is displayed followed by the name of the preset itself. If a User Preset is loaded, its name is displayed.
Save to 'File Name' As…   Saves the current settings as a new preset into the Setup file that is open (if one is not open, the option is grayed out). You will be prompted to give the preset a name.
Put into Preset Menu As…   Save the current settings into a User Preset that will always be in your Load menu (until deleted). You will be prompted to give this preset a name. User Presets are stored in the plug-in's preference file.

Deleting Presets

You may delete User Presets and presets within a Setup File. Factory Presets and Setup Library files cannot be deleted or overwritten.

1. Hold the Command (Mac)/Control (PC) key down.
2. Click-and-hold the Load button to see the pop-up menu.
3. While still holding the Command/Control key, select the preset or setup to delete.
4. A confirmation box will appear, allowing you to cancel or 'OK' the deletion.

A/B Comparison and Copying

The Setup A/Setup B button may be clicked to compare two settings. If you load a preset in the Setup B position, this will not affect the preset loaded into the Setup A position, and vice-versa.

If you want to slightly modify the settings in Setup A, you can copy them to Setup B by clicking on the Copy to B button, then alter Setup A and compare with the original Setup B.

The name of the current setup will be shown in the title bar (on platforms which support it), and will switch as you change from Setup A to Setup B.

Note: an asterisk will be added to the preset name when a change is made to the preset -

4.3 Interface Controls

Controls can be in one of three states:

- **Not Selected** where the control is not the target of any user entry
- **Selected** where the control is the target of mouse control entry only
- **Selected and Active** where the control is the target for both mouse and keyboard entry

Toggle Buttons

Toggle buttons display the state of a control, and allow switching between two or more states. **Single-click** to change the control's state. Some toggle buttons have a text display which updates with the current setting, and others (bypass, solo, or monitoring toggles) illuminate when the control is active.

Some processors have **link buttons** between a pair of toggle buttons, allowing click-and-drag adjustment while retaining the offset between the controls.

Value Window Buttons

Value windows display the value of a control and allow **click-and-drag** adjustment, or **direct control via the keyboard**.

- **Using the mouse**, click-and-drag on the value window to adjust. Some value windows support left/right, some up/down (as you hover over a button, arrows will appear to let you know which direction of movement that button supports).
- **Using the arrow keys**, click once with mouse to select the button, and then use up/down – left/right (depending on the direction supported by that button) to move in the smallest incremental steps across the button's range (holding down the arrow keys will move faster through the range).
- **Using key entry**, double click on the button to open the value window, and directly enter the value from your keyboard. If you enter an out of range number, the button stays selected but remains at the current setting (system beeps? If system sounds are on?)

Some processors have **link buttons** between a pair of value windows, allowing click-and-drag adjustment while retaining the offset between the controls.

Sliders

Click on the slider itself or anywhere within the sliders track. The numerical value of the slider settings is displayed in a hover window above the slider path.

Hover Box

Hovering boxes will appear and display the control value when hovering with the mouse over the control.

Multiple Selection of Controls

One of the most powerful features of the WaveSystem is the ability to select and adjust many controls at the same time. Using the mouse, simply drag-select the desired group of button or graphic controls by clicking and holding at a point outside the controls and forming a rectangle to include the controls you wish to adjust. Alternatively, you can hold down Shift while clicking the mouse on any control you wish to link. This second method is useful when you want to select two (or more) controls that are separated on the GUI by other controls you do not wish to select.

TAB Functions

TAB moves the 'selected' status to the next control, with shift-TAB moving in the reverse direction.

Additionally, the Mac has an option-TAB function for 'down' movement and shift-option-TAB for 'up' movement where applicable.

If you have several Value Window Buttons selected, TAB functions will take you through the selected controls only.

Appendix A – PuigTec EQP-1A Controls

Control	Range	Default
Low Band Boost	0 to 11 (18 dB boost, 0.1 steps)	0
Low Band Atten	0 to 11 (18 dB boost, 0.1 steps)	0
Low Band Frequency	20Hz, 30Hz, 60Hz, 100Hz	30Hz
Hi Bell Boost	0 to 11 (18 dB boost, 0.1 steps)	0
Hi Bell Bandwidth (Q)	0 to 11 (0=sharp 11=wide, 0.1 steps)	0
Hi Bell Frequency	3kHz, 4kHz, 5kHz, 8kHz, 10kHz 12kHz, 16kHz	3kHz
High Shelf Atten	0 to 11 (18 dB boost, 0.1 steps)	0
High Shelf Frequency (Atten Sel)	5kHz, 10kHz, 20kHz	20kHz
In	In/Out	In
Output	-18dB to 18dB (0.1 steps)	0dB
Mains	Off, 50Hz, 60Hz	60Hz